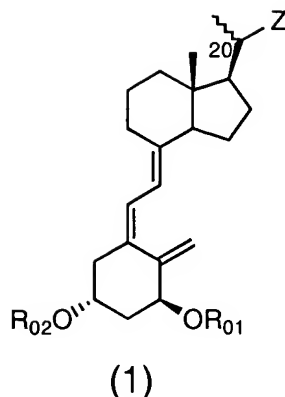
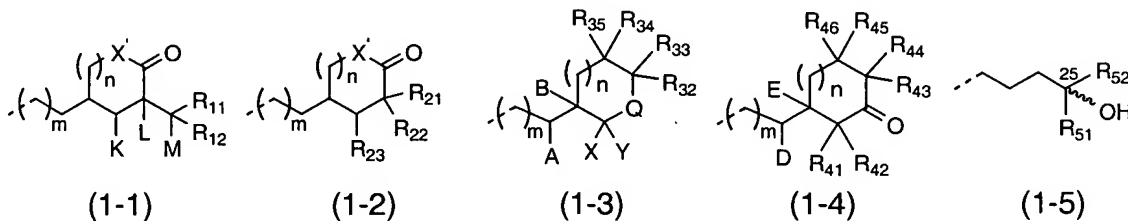


T 1600



wherein,  $R_{01}$  and  $R_{02}$  are each independently a hydrogen atom, a trimethylsilyl group, a triethylsilyl group, a t-butyldimethylsilyl group, an acetyl group, a methoxymethyl group or a tetrahydro-4H-pyran-2-yl group;

Z is one out of the following formulae (1-1), (1-2), (1-3), (1-4) or (1-5),



in the above formulae (1-1) to (1-5),

m is an integer of 0 to 2;

n is an integer of 0 to 2;

X' is an oxygen atom or NH;

$R_{11}$  and  $R_{12}$  are identical to or different from each other, and express a hydrogen atom or a C<sub>1</sub>-C<sub>4</sub> alkyl group;

K, L and M are each a hydrogen atom; M is a hydrogen atom, and K and L together express a single bond and express a double bond in cooperation with the single bond already shown in the formula; or K is a hydrogen atom, and L and M together express a single bond and express a double bond in cooperation with the single bond already shown in the formula;

R<sub>21</sub>, R<sub>22</sub> and R<sub>23</sub> are identical to or different from each other, and they are a hydrogen atom, a hydroxy group, a carboxyl group, a trifluoromethyl group, a pentafluoroethyl group, a C<sub>1</sub>-C<sub>4</sub> alkyloxycarbonyl group, a C<sub>2</sub>-C<sub>5</sub> acyloxy group, a C<sub>1</sub>-C<sub>4</sub> alkyloxy group or a C<sub>1</sub>-C<sub>4</sub> alkyl group which may be substituted with a hydroxyl group, a C<sub>2</sub>-C<sub>5</sub> acyloxy group or a C<sub>1</sub>-C<sub>4</sub> alkyloxy group, or R<sub>21</sub> and R<sub>22</sub> together may express a C<sub>3</sub>-C<sub>6</sub> cyclic alkyl group in cooperation with the carbon atom to which they are bonded;

Q expresses >C(-F)-R<sub>31</sub> or >N-R<sub>31</sub>, and herein R<sub>31</sub> is a hydrogen atom, a hydroxyl group, a trifluoromethyl group, a pentafluoroethyl group, a C<sub>2</sub>-C<sub>5</sub> acyloxy group, a C<sub>1</sub>-C<sub>4</sub> alkyloxy group or a C<sub>1</sub>-C<sub>4</sub> alkyl group which may be substituted with a hydroxy group, a C<sub>2</sub>-C<sub>5</sub> acyloxy group or a C<sub>1</sub>-C<sub>4</sub> alkyloxy group;

R<sub>32</sub>, R<sub>33</sub>, R<sub>34</sub> and R<sub>35</sub> are identical to or different from each other, and they are a hydrogen atom, a hydroxyl group, a C<sub>1</sub>-C<sub>4</sub> alkyl group or a C<sub>2</sub>-C<sub>5</sub> acyloxy group;

A and B are identical to or different from each other, and they express a hydrogen atom or a hydroxyl group, or together express a single bond and form a double bond in cooperation with the single bond already shown in the formula;

X and Y together express a carbonyl group in cooperation with the carbon atom to which they are bonded, one of them is a hydrogen atom and the other is a hydroxyl group, or one of them is a hydrogen atom and the other is a C<sub>2</sub>-C<sub>5</sub> acyloxy group;

*Amended B1*

R<sub>41</sub> and R<sub>42</sub> are identical to or different from each other, and they express a hydrogen atom, a hydroxyl group, a trifluoromethyl group, a pentafluoroethyl group, a C<sub>2</sub>-C<sub>5</sub> acyloxy group, a C<sub>1</sub>-C<sub>4</sub> alkyloxy group or a C<sub>1</sub>-C<sub>4</sub> alkyl group which may be substituted with a hydroxyl group, a C<sub>2</sub>-C<sub>5</sub> acyloxy group or a C<sub>1</sub>-C<sub>4</sub> alkyloxy group, or both the members together express a C<sub>1</sub>-C<sub>5</sub> alkylidene group, or they express a C<sub>3</sub>-C<sub>6</sub> cyclic alkyl group in cooperation with the carbon atom to which they are bonded;

R<sub>43</sub> and R<sub>44</sub> are identical to or different from each other, and they express a hydrogen atom, a hydroxyl group, a trifluoromethyl group, a pentafluoroethyl group, a C<sub>2</sub>-C<sub>5</sub> acyloxy group, a C<sub>1</sub>-C<sub>4</sub> alkyloxy group or a C<sub>1</sub>-C<sub>4</sub> alkyl group which may be substituted with a hydroxyl group, a C<sub>2</sub>-C<sub>5</sub> acyloxy group or a C<sub>1</sub>-C<sub>4</sub> alkyloxy group, or both the members together express a C<sub>1</sub>-C<sub>5</sub> alkylidene group, or express a C<sub>3</sub>-C<sub>6</sub> cyclic alkyl group in cooperation with the carbon atom to which they are bonded;

R<sub>45</sub> and R<sub>46</sub> are identical to or different from each other, and they express a hydrogen atom, a hydroxyl group, a trifluoromethyl group, a pentafluoroethyl group, a C<sub>2</sub>-C<sub>5</sub> acyloxy group, a C<sub>1</sub>-C<sub>4</sub> alkyloxy group or a C<sub>1</sub>-C<sub>4</sub> alkyl group which may be substituted with a hydroxyl group, a C<sub>2</sub>-C<sub>5</sub> acyloxy group or a C<sub>1</sub>-C<sub>4</sub> alkyloxy group;

D and E express each a hydrogen atom, D is a hydroxy group and E expresses a hydrogen atom, D and E together express a single bond and express a double bond in cooperation with the single bond already shown in the formula, or E and R<sub>41</sub> together express a single bond and express a double bond in cooperation with the single bond already shown in the formula, wherein D expresses a hydrogen atom or a hydroxy group; and R<sub>42</sub> expresses a hydrogen atom, a hydroxyl group, a trifluoromethyl group, a pentafluoroethyl group, a C<sub>2</sub>-C<sub>5</sub>

Amendment Under 37 C.F.R. § 1.111  
U.S. Application No. 10/035,217

acyloxy group, a C<sub>1</sub>-C<sub>4</sub> alkyloxy group or a C<sub>1</sub>-C<sub>4</sub> alkyl group which may be substituted with a hydroxyl group, a C<sub>2</sub>-C<sub>5</sub> acyloxy group or a C<sub>1</sub>-C<sub>4</sub> alkyloxy group;

R<sub>51</sub> expresses -CONR<sub>511</sub>R<sub>512</sub>, -COR<sub>513</sub> or -C(OH)R<sub>514</sub>R<sub>515</sub>, wherein R<sub>511</sub> and R<sub>512</sub> are identical to or different from each other, and they are a hydrogen atom or a C<sub>1</sub>-C<sub>4</sub> alkyl group, or both the members together express a nitrogen-containing C<sub>3</sub>-C<sub>8</sub> alkyl ring or a morpholino group in cooperation with the nitrogen atom to which they are bonded; and R<sub>513</sub>, R<sub>514</sub> and R<sub>515</sub> are identical to or different from each other, and they express a C<sub>1</sub>-C<sub>4</sub> alkyl group;

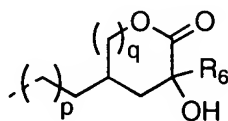
R<sub>52</sub> expresses a methyl group, an ethyl group, a trifluoromethyl group or a pentafluoroethyl group,

with the proviso that the following compounds (a), (b) and (c) are excluded,

(a) a compound in which the groups of one combination out of R<sub>21</sub> and R<sub>22</sub>, R<sub>32</sub> and R<sub>33</sub>, R<sub>34</sub> and R<sub>35</sub>, R<sub>41</sub> and R<sub>42</sub>, R<sub>43</sub> and R<sub>44</sub>, and R<sub>45</sub> and R<sub>46</sub> are both hydroxy groups, both alkyloxy groups, or a hydroxy group and an alkyloxy group,

(b) a compound expressed by the above formula (1) in which Z is the following formula

(1-6),



(1-6)

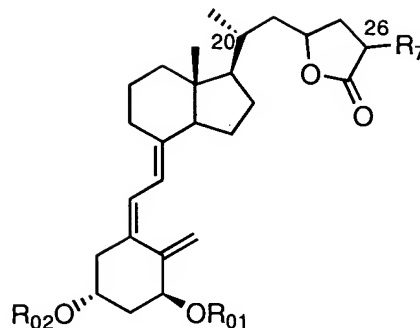
wherein, p and q are each 0 or the integer 1; R<sub>6</sub> is a hydrogen atom or a C<sub>1</sub>-C<sub>4</sub> alkyl group, and

(c) a compound of the following formula (2),

5

B

T1631



(2)

wherein, R<sub>01</sub> and R<sub>02</sub> are defined in the same manner as in the above formula (1); the configuration of the carbon atom at the 20-position is (R)-configuration; R<sub>7</sub> is a methyl group or a methylene group; when R<sub>7</sub> is a methylene group, the bond between R<sub>7</sub> and the carbon atom at the 26-position is double bond.

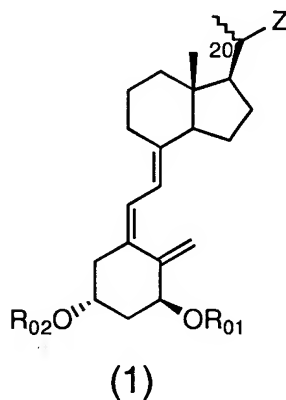
47. <sup>2</sup> (Amended) The method according to 46, wherein the inflammatory respiratory disease is one or not less than two kinds of inflammatory respiratory diseases selected from a group consisting of acute upper airway infection, chronic sinusitis, allergic rhinitis, chronic lower airway infection, pulmonary emphysema, pneumonia, bronchial asthma, tuberculosis sequela, acute respiratory distress syndrome, cystic fibrosis and pulmonary fibrosis.

3 48. (Amended) The method according to claim 47, <sup>2</sup> wherein the acute upper airway infection is one or not less than two kinds of diseases selected from a group consisting of common cold, acute pharyngitis, acute rhinitis, acute sinusitis, acute tonsillitis, acute pharyngitis, acute epiglottitis and acute bronchitis.

4 49. (Amended) The method according to claim 47, <sup>2</sup> wherein the chronic lower airway infection is one or not less than two kinds of diseases selected from a group consisting of chronic bronchitis, diffuse panbronchiolitis and bronchiectasis.

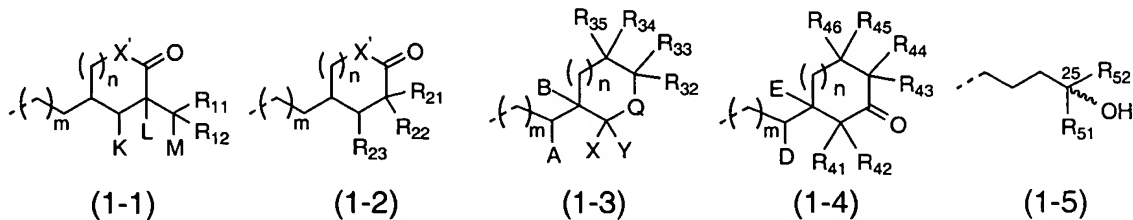
*Canal B1*

§ 50. (Amended) A method for treating one or not less than two kinds of inflammatory respiratory diseases selected from a group consisting of chronic bronchitis, diffuse panbronchiolitis, bronchiectasis, bronchial asthma, pulmonary emphysema, tuberculosis sequela and cystic fibrosis comprising administering to a subject a therapeutically effective amount of a vitamin D<sub>3</sub> compound expressed by the following formula (1) or pharmaceutically permissible solvate thereof:



wherein, R<sub>01</sub> and R<sub>02</sub> are each independently a hydrogen atom, a trimethylsilyl group, a triethylsilyl group, a t-butyldimethylsilyl group, an acetyl group, a methoxymethyl group or a tetrahydro-4H-pyran-2-yl group;

Z is one out of the following formulae (1-1), (1-2), (1-3), (1-4) or (1-5),



in the above formulae (1-1) to (1-5),

m is an integer of 0 to 2;

n is an integer of 0 to 2;

X' is an oxygen atom or NH;

R<sub>11</sub> and R<sub>12</sub> are identical to or different from each other, and express a hydrogen atom or a C<sub>1</sub>-C<sub>4</sub> alkyl group;

K, L and M are each a hydrogen atom; M is a hydrogen atom, and K and L together express a single bond and express a double bond in cooperation with the single bond already shown in the formula; or K is a hydrogen atom, and L and M together express a single bond and express a double bond in cooperation with the single bond already shown in the formula;

R<sub>21</sub>, R<sub>22</sub> and R<sub>23</sub> are identical to or different from each other, and they are a hydrogen atom, a hydroxy group, a carboxyl group, a trifluoromethyl group, a pentafluoroethyl group, a C<sub>1</sub>-C<sub>4</sub> alkyloxycarbonyl group, a C<sub>2</sub>-C<sub>5</sub> acyloxy group, a C<sub>1</sub>-C<sub>4</sub> alkyloxy group or a C<sub>1</sub>-C<sub>4</sub> alkyl group which may be substituted with a hydroxyl group, a C<sub>2</sub>-C<sub>5</sub> acyloxy group or a C<sub>1</sub>-C<sub>4</sub> alkyloxy group, or R<sub>21</sub> and R<sub>22</sub> together may express a C<sub>3</sub>-C<sub>6</sub> cyclic alkyl group in cooperation with the carbon atom to which they are bonded;

Q expresses >C(-F)-R<sub>31</sub> or >N-R<sub>31</sub>, and herein R<sub>31</sub> is a hydrogen atom, a hydroxyl group, a trifluoromethyl group, a pentafluoroethyl group, a C<sub>2</sub>-C<sub>5</sub> acyloxy group, a C<sub>1</sub>-C<sub>4</sub> alkyloxy group or a C<sub>1</sub>-C<sub>4</sub> alkyl group which may be substituted with a hydroxy group, a C<sub>2</sub>-C<sub>5</sub> acyloxy group or a C<sub>1</sub>-C<sub>4</sub> alkyloxy group;

R<sub>32</sub>, R<sub>33</sub>, R<sub>34</sub> and R<sub>35</sub> are identical to or different from each other, and they are a hydrogen atom, a hydroxyl group, a C<sub>1</sub>-C<sub>4</sub> alkyl group or a C<sub>2</sub>-C<sub>5</sub> acyloxy group;

A and B are identical to or different from each other, and they express a hydrogen atom or a hydroxyl group, or together express a single bond and form a double bond in cooperation with the single bond already shown in the formula;

X and Y together express a carbonyl group in cooperation with the carbon atom to which they are bonded, one of them is a hydrogen atom and the other is a hydroxyl group, or one of them is a hydrogen atom and the other is a C<sub>2</sub>-C<sub>5</sub> acyloxy group;

R<sub>41</sub> and R<sub>42</sub> are identical to or different from each other, and they express a hydrogen atom, a hydroxyl group, a trifluoromethyl group, a pentafluoroethyl group, a C<sub>2</sub>-C<sub>5</sub> acyloxy group, a C<sub>1</sub>-C<sub>4</sub> alkyloxy group or a C<sub>1</sub>-C<sub>4</sub> alkyl group which may be substituted with a hydroxyl group, a C<sub>2</sub>-C<sub>5</sub> acyloxy group or a C<sub>1</sub>-C<sub>4</sub> alkyloxy group, or both the members together express a C<sub>1</sub>-C<sub>5</sub> alkylidene group, or they express a C<sub>3</sub>-C<sub>6</sub> cyclic alkyl group in cooperation with the carbon atom to which they are bonded;

R<sub>43</sub> and R<sub>44</sub> are identical to or different from each other, and they express a hydrogen atom, a hydroxyl group, a trifluoromethyl group, a pentafluoroethyl group, a C<sub>2</sub>-C<sub>5</sub> acyloxy group, a C<sub>1</sub>-C<sub>4</sub> alkyloxy group or a C<sub>1</sub>-C<sub>4</sub> alkyl group which may be substituted with a hydroxyl group, a C<sub>2</sub>-C<sub>5</sub> acyloxy group or a C<sub>1</sub>-C<sub>4</sub> alkyloxy group, or both the members together express a C<sub>1</sub>-C<sub>5</sub> alkylidene group, or express a C<sub>3</sub>-C<sub>6</sub> cyclic alkyl group in cooperation with the carbon atom to which they are bonded;

R<sub>45</sub> and R<sub>46</sub> are identical to or different from each other, and they express a hydrogen atom, a hydroxyl group, a trifluoromethyl group, a pentafluoroethyl group, a C<sub>2</sub>-C<sub>5</sub> acyloxy group, a C<sub>1</sub>-C<sub>4</sub> alkyloxy group or a C<sub>1</sub>-C<sub>4</sub> alkyl group which may be substituted with a hydroxyl group, a C<sub>2</sub>-C<sub>5</sub> acyloxy group or a C<sub>1</sub>-C<sub>4</sub> alkyloxy group;

D and E express each a hydrogen atom, D is a hydroxy group and E expresses a hydrogen atom, D and E together express a single bond and express a double bond in cooperation with the single bond already shown in the formula, or E and R<sub>41</sub> together express a single bond and express a double bond in cooperation with the single bond already shown in the formula, wherein D expresses a hydrogen atom or a hydroxy group; and R<sub>42</sub> expresses a hydrogen atom, a hydroxyl group, a trifluoromethyl group, a pentafluoroethyl group, a C<sub>2</sub>-C<sub>5</sub> acyloxy group, a C<sub>1</sub>-C<sub>4</sub> alkyloxy group or a C<sub>1</sub>-C<sub>4</sub> alkyl group which may be substituted with a hydroxyl group, a C<sub>2</sub>-C<sub>5</sub> acyloxy group or a C<sub>1</sub>-C<sub>4</sub> alkyloxy group;

R<sub>51</sub> expresses -CONR<sub>511</sub>R<sub>512</sub>, -COR<sub>513</sub> or -C(OH)R<sub>514</sub>R<sub>515</sub>, wherein R<sub>511</sub> and R<sub>512</sub> are identical to or different from each other, and they are a hydrogen atom or a C<sub>1</sub>-C<sub>4</sub> alkyl group, or both the members together express a nitrogen-containing C<sub>3</sub>-C<sub>8</sub> alkyl ring or a morpholino group in cooperation with the nitrogen atom to which they are bonded; and R<sub>513</sub>, R<sub>514</sub> and R<sub>515</sub> are identical to or different from each other, and they express a C<sub>1</sub>-C<sub>4</sub> alkyl group;

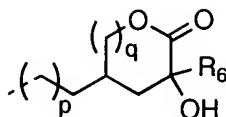
R<sub>52</sub> expresses a methyl group, an ethyl group, a trifluoromethyl group or a pentafluoroethyl group,

with the proviso that the following compounds (a), (b) and (c) are excluded,

(a) a compound in which the groups of one combination out of R<sub>21</sub> and R<sub>22</sub>, R<sub>32</sub> and R<sub>33</sub>, R<sub>34</sub> and R<sub>35</sub>, R<sub>41</sub> and R<sub>42</sub>, R<sub>43</sub> and R<sub>44</sub>, and R<sub>45</sub> and R<sub>46</sub> are both hydroxy groups, both alkyloxy groups, or a hydroxy group and an alkyloxy group,

(b) a compound expressed by the above formula (1) in which Z is the following formula (1-6),

T9002

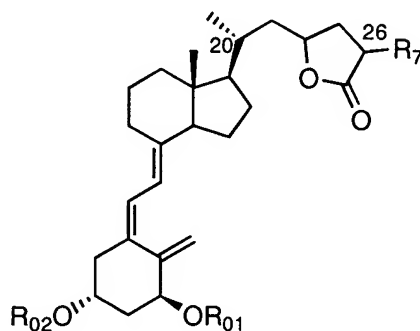


(1-6)

wherein,  $p$  and  $q$  are each 0 or the integer 1;  $\text{R}_6$  is a hydrogen atom or a  $\text{C}_1\text{-C}_4$  alkyl group, and

(c) a compound of the following formula (2),

T9003

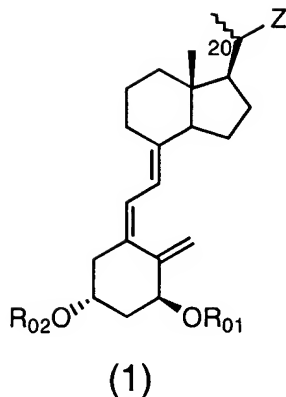


(2)

wherein,  $\text{R}_{01}$  and  $\text{R}_{02}$  are defined in the same manner as in the above formula (1); the configuration of the carbon atom at the 20-position is (R)-configuration;  $\text{R}_7$  is a methyl group or a methylene group; when  $\text{R}_7$  is a methylene group, the bond between  $\text{R}_7$  and the carbon atom at the 26-position is double bond.

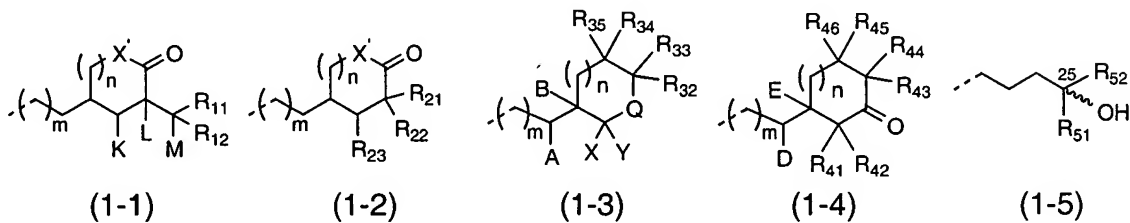
6. ~~1.~~ (Amended) A method for treating a disease selected from a group consisting of malignant tumors, rheumatoid arthritis, osteoporosis, diabetes mellitus, hypertension, alopecia, acne, psoriasis and dermatitis comprising administering to a subject a therapeutically effective amount of a vitamin  $\text{D}_3$  compound expressed by the following formula (1) or pharmaceutically permissible solvate thereof:

T 9004



wherein,  $R_{01}$  and  $R_{02}$  are each independently a hydrogen atom, a trimethylsilyl group, a triethylsilyl group, a t-butyldimethylsilyl group, an acetyl group, a methoxymethyl group or a tetrahydro-4H-pyran-2-yl group;

Z is one out of the following formulae (1-1), (1-2), (1-3), (1-4) or (1-5),



in the above formulae (1-1) to (1-5),


m is an integer of 0 to 2;

n is an integer of 0 to 2;

X' is an oxygen atom or NH;

$R_{11}$  and  $R_{12}$  are identical to or different from each other, and express a hydrogen atom or a  $C_1$ - $C_4$  alkyl group;

K, L and M are each a hydrogen atom; M is a hydrogen atom, and K and L together express a single bond and express a double bond in cooperation with the single bond already shown in the formula; or K is a hydrogen atom, and L and M together express a single bond and express a double bond in cooperation with the single bond already shown in the formula;


 R<sub>21</sub>, R<sub>22</sub> and R<sub>23</sub> are identical to or different from each other, and they are a hydrogen atom, a hydroxy group, a carboxyl group, a trifluoromethyl group, a pentafluoroethyl group, a C<sub>1</sub>-C<sub>4</sub> alkyloxycarbonyl group, a C<sub>2</sub>-C<sub>5</sub> acyloxy group, a C<sub>1</sub>-C<sub>4</sub> alkyloxy group or a C<sub>1</sub>-C<sub>4</sub> alkyl group which may be substituted with a hydroxyl group, a C<sub>2</sub>-C<sub>5</sub> acyloxy group or a C<sub>1</sub>-C<sub>4</sub> alkyloxy group, or R<sub>21</sub> and R<sub>22</sub> together may express a C<sub>3</sub>-C<sub>6</sub> cyclic alkyl group in cooperation with the carbon atom to which they are bonded;

Q expresses >C(-F)-R<sub>31</sub> or >N-R<sub>31</sub>, and herein R<sub>31</sub> is a hydrogen atom, a hydroxyl group, a trifluoromethyl group, a pentafluoroethyl group, a C<sub>2</sub>-C<sub>5</sub> acyloxy group, a C<sub>1</sub>-C<sub>4</sub> alkyloxy group or a C<sub>1</sub>-C<sub>4</sub> alkyl group which may be substituted with a hydroxy group, a C<sub>2</sub>-C<sub>5</sub> acyloxy group or a C<sub>1</sub>-C<sub>4</sub> alkyloxy group;

R<sub>32</sub>, R<sub>33</sub>, R<sub>34</sub> and R<sub>35</sub> are identical to or different from each other, and they are a hydrogen atom, a hydroxyl group, a C<sub>1</sub>-C<sub>4</sub> alkyl group or a C<sub>2</sub>-C<sub>5</sub> acyloxy group;

A and B are identical to or different from each other, and they express a hydrogen atom or a hydroxyl group, or together express a single bond and form a double bond in cooperation with the single bond already shown in the formula;

X and Y together express a carbonyl group in cooperation with the carbon atom to which they are bonded, one of them is a hydrogen atom and the other is a hydroxyl group, or one of them is a hydrogen atom and the other is a C<sub>2</sub>-C<sub>5</sub> acyloxy group;

 R<sub>41</sub> and R<sub>42</sub> are identical to or different from each other, and they express a hydrogen atom, a hydroxyl group, a trifluoromethyl group, a pentafluoroethyl group, a C<sub>2</sub>-C<sub>5</sub> acyloxy group, a C<sub>1</sub>-C<sub>4</sub> alkyloxy group or a C<sub>1</sub>-C<sub>4</sub> alkyl group which may be substituted with a hydroxyl group, a C<sub>2</sub>-C<sub>5</sub> acyloxy group or a C<sub>1</sub>-C<sub>4</sub> alkyloxy group, or both the members together express a C<sub>1</sub>-C<sub>5</sub> alkylidene group, or they express a C<sub>3</sub>-C<sub>6</sub> cyclic alkyl group in cooperation with the carbon atom to which they are bonded;

R<sub>43</sub> and R<sub>44</sub> are identical to or different from each other, and they express a hydrogen atom, a hydroxyl group, a trifluoromethyl group, a pentafluoroethyl group, a C<sub>2</sub>-C<sub>5</sub> acyloxy group, a C<sub>1</sub>-C<sub>4</sub> alkyloxy group or a C<sub>1</sub>-C<sub>4</sub> alkyl group which may be substituted with a hydroxyl group, a C<sub>2</sub>-C<sub>5</sub> acyloxy group or a C<sub>1</sub>-C<sub>4</sub> alkyloxy group, or both the members together express a C<sub>1</sub>-C<sub>5</sub> alkylidene group, or express a C<sub>3</sub>-C<sub>6</sub> cyclic alkyl group in cooperation with the carbon atom to which they are bonded;

R<sub>45</sub> and R<sub>46</sub> are identical to or different from each other, and they express a hydrogen atom, a hydroxyl group, a trifluoromethyl group, a pentafluoroethyl group, a C<sub>2</sub>-C<sub>5</sub> acyloxy group, a C<sub>1</sub>-C<sub>4</sub> alkyloxy group or a C<sub>1</sub>-C<sub>4</sub> alkyl group which may be substituted with a hydroxyl group, a C<sub>2</sub>-C<sub>5</sub> acyloxy group or a C<sub>1</sub>-C<sub>4</sub> alkyloxy group;

D and E express each a hydrogen atom, D is a hydroxy group and E expresses a hydrogen atom, D and E together express a single bond and express a double bond in cooperation with the single bond already shown in the formula, or E and R<sub>41</sub> together express a single bond and express a double bond in cooperation with the single bond already shown in the formula, wherein D expresses a hydrogen atom or a hydroxy group; and R<sub>42</sub> expresses a hydrogen atom, a hydroxyl group, a trifluoromethyl group, a pentafluoroethyl group, a C<sub>2</sub>-C<sub>5</sub>

acyloxy group, a C<sub>1</sub>-C<sub>4</sub> alkyloxy group or a C<sub>1</sub>-C<sub>4</sub> alkyl group which may be substituted with a hydroxyl group, a C<sub>2</sub>-C<sub>5</sub> acyloxy group or a C<sub>1</sub>-C<sub>4</sub> alkyloxy group;

*Handwritten: R<sub>51</sub>*  
R<sub>51</sub> expresses -CONR<sub>511</sub>R<sub>512</sub>, -COR<sub>513</sub> or -C(OH)R<sub>514</sub>R<sub>515</sub>, wherein R<sub>511</sub> and R<sub>512</sub> are identical to or different from each other, and they are a hydrogen atom or a C<sub>1</sub>-C<sub>4</sub> alkyl group, or both the members together express a nitrogen-containing C<sub>3</sub>-C<sub>8</sub> alkyl ring or a morpholino group in cooperation with the nitrogen atom to which they are bonded; and R<sub>513</sub>, R<sub>514</sub> and R<sub>515</sub> are identical to or different from each other, and they express a C<sub>1</sub>-C<sub>4</sub> alkyl group;

R<sub>52</sub> expresses a methyl group, an ethyl group, a trifluoromethyl group or a pentafluoroethyl group,

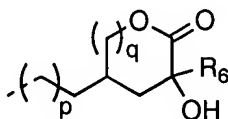
with the proviso that the following compounds (a), (b) and (c) are excluded,

(a) a compound in which the groups of one combination out of R<sub>21</sub> and R<sub>22</sub>, R<sub>32</sub> and R<sub>33</sub>, R<sub>34</sub> and R<sub>35</sub>, R<sub>41</sub> and R<sub>42</sub>, R<sub>43</sub> and R<sub>44</sub>, and R<sub>45</sub> and R<sub>46</sub> are both hydroxy groups, both alkyloxy groups, or a hydroxy group and an alkyloxy group,

(b) a compound expressed by the above formula (1) in which Z is the following formula

(1-6),

*Handwritten: T 9006*

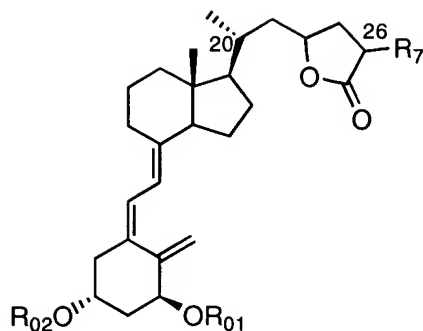


(1-6)

wherein,  $p$  and  $q$  are each 0 or the integer 1;  $R_6$  is a hydrogen atom or a C<sub>1</sub>-C<sub>4</sub> alkyl group, and

(c) a compound of the following formula (2),

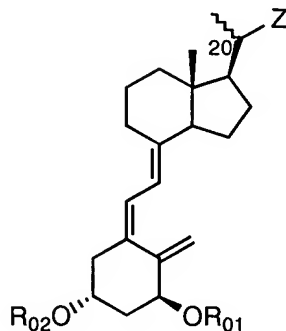
T9607



(2)

wherein,  $R_{01}$  and  $R_{02}$  are defined in the same manner as in the above formula (1); the configuration of the carbon atom at the 20-position is (R)-configuration;  $R_7$  is a methyl group or a methylene group; when  $R_7$  is a methylene group, the bond between  $R_7$  and the carbon atom at the 26-position is double bond.

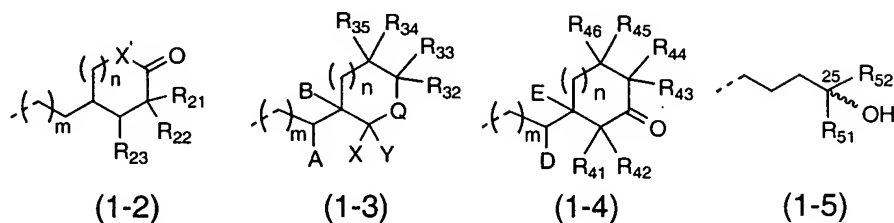
7 82. (Amended) A method for treating hypercalcemia attributable to vitamin D excess comprising administering to a subject a therapeutically effective amount of a vitamin D<sub>3</sub> compound of the following Formula (1) or pharmaceutically permissible solvate thereof,



(1)

wherein,  $R_{01}$  and  $R_{02}$  are each independently a hydrogen atom, a trimethylsilyl group, a triethylsilyl group, a t-butyldimethylsilyl group, an acetyl group, a methoxymethyl group or a tetrahydro-4H-pyran-2-yl group;

Z is one out of the following formulae (1-2), (1-3), (1-4) or (1-5),



in the above formulae (1-2) to (1-5),

m is an integer of 0 to 2;

n is an integer of 0 to 2;

X' is an oxygen atom or NH;

$R_{21}$ ,  $R_{22}$  and  $R_{23}$  are identical to or different from each other, and they are a hydrogen atom, a hydroxy group, a carboxyl group, a trifluoromethyl group, a pentafluoroethyl group, a  $C_1$ - $C_4$  alkyloxycarbonyl group, a  $C_2$ - $C_5$  acyloxy group, a  $C_1$ - $C_4$  alkyloxy group or a  $C_1$ - $C_4$  alkyl group which may be substituted with a hydroxyl group, a  $C_2$ - $C_5$  acyloxy group or a  $C_1$ - $C_4$  alkyloxy group, or  $R_{21}$  and  $R_{22}$  together may express a  $C_3$ - $C_6$  cyclic alkyl group in cooperation with the carbon atom to which they are bonded;

Q expresses  $>C(F)-R_{31}$  or  $>N-R_{31}$ , and herein  $R_{31}$  is a hydrogen atom, a hydroxyl group, a trifluoromethyl group, a pentafluoroethyl group, a  $C_2$ - $C_5$  acyloxy group, a  $C_1$ - $C_4$  alkyloxy group or a  $C_1$ - $C_4$  alkyl group which may be substituted with a hydroxy group, a  $C_2$ - $C_5$  acyloxy group or a  $C_1$ - $C_4$  alkyloxy group;

$R_{32}$ ,  $R_{33}$ ,  $R_{34}$  and  $R_{35}$  are identical to or different from each other, and they are a hydrogen atom, a hydroxyl group, a  $C_1$ - $C_4$  alkyl group or a  $C_2$ - $C_5$  acyloxy group;


A and B are identical to or different from each other, and they express a hydrogen atom or a hydroxyl group, or together express a single bond and form a double bond in cooperation with the single bond already shown in the formula;

X and Y together express a carbonyl group in cooperation with the carbon atom to which they are bonded, one of them is a hydrogen atom and the other is a hydroxyl group, or one of them is a hydrogen atom and the other is a C<sub>2</sub>-C<sub>5</sub> acyloxy group;

R<sub>41</sub> and R<sub>42</sub> are identical to or different from each other, and they express a hydrogen atom, a hydroxyl group, a trifluoromethyl group, a pentafluoroethyl group, a C<sub>2</sub>-C<sub>5</sub> acyloxy group, a C<sub>1</sub>-C<sub>4</sub> alkyloxy group or a C<sub>1</sub>-C<sub>4</sub> alkyl group which may be substituted with a hydroxyl group, a C<sub>2</sub>-C<sub>5</sub> acyloxy group or a C<sub>1</sub>-C<sub>4</sub> alkyloxy group, or both the members together express a C<sub>1</sub>-C<sub>5</sub> alkylidene group, or they express a C<sub>3</sub>-C<sub>6</sub> cyclic alkyl group in cooperation with the carbon atom to which they are bonded;

R<sub>43</sub> and R<sub>44</sub> are identical to or different from each other, and they express a hydrogen atom, a hydroxyl group, a trifluoromethyl group, a pentafluoroethyl group, a C<sub>2</sub>-C<sub>5</sub> acyloxy group, a C<sub>1</sub>-C<sub>4</sub> alkyloxy group or a C<sub>1</sub>-C<sub>4</sub> alkyl group which may be substituted with a hydroxyl group, a C<sub>2</sub>-C<sub>5</sub> acyloxy group or a C<sub>1</sub>-C<sub>4</sub> alkyloxy group, or both the members together express a C<sub>1</sub>-C<sub>5</sub> alkylidene group, or express a C<sub>3</sub>-C<sub>6</sub> cyclic alkyl group in cooperation with the carbon atom to which they are bonded;

R<sub>45</sub> and R<sub>46</sub> are identical to or different from each other, and they express a hydrogen atom, a hydroxyl group, a trifluoromethyl group, a pentafluoroethyl group, a C<sub>2</sub>-C<sub>5</sub> acyloxy group, a C<sub>1</sub>-C<sub>4</sub> alkyloxy group or a C<sub>1</sub>-C<sub>4</sub> alkyl group which may be substituted with a hydroxyl group, a C<sub>2</sub>-C<sub>5</sub> acyloxy group or a C<sub>1</sub>-C<sub>4</sub> alkyloxy group;

 D and E express each a hydrogen atom, D is a hydroxy group and E expresses a hydrogen atom, D and E together express a single bond and express a double bond in cooperation with the single bond already shown in the formula, or E and R<sub>41</sub> together express a single bond and express a double bond in cooperation with the single bond already shown in the formula, wherein D expresses a hydrogen atom or a hydroxy group; and R<sub>42</sub> expresses a hydrogen atom, a hydroxyl group, a trifluoromethyl group, a pentafluoroethyl group, a C<sub>2</sub>-C<sub>5</sub> acyloxy group, a C<sub>1</sub>-C<sub>4</sub> alkyloxy group or a C<sub>1</sub>-C<sub>4</sub> alkyl group which may be substituted with a hydroxyl group, a C<sub>2</sub>-C<sub>5</sub> acyloxy group or a C<sub>1</sub>-C<sub>4</sub> alkyloxy group;

R<sub>51</sub> expresses -CONR<sub>511</sub>R<sub>512</sub>, -COR<sub>513</sub> or -C(OH) R<sub>514</sub>R<sub>515</sub>, wherein R<sub>511</sub> and R<sub>512</sub> are identical to or different from each other, and they are a hydrogen atom or a C<sub>1</sub>-C<sub>4</sub> alkyl group, or both the members together express a nitrogen-containing C<sub>3</sub>-C<sub>8</sub> alkyl ring or a morpholino group in cooperation with the nitrogen atom to which they are bonded; and R<sub>513</sub>, R<sub>514</sub> and R<sub>515</sub> are identical to or different from each other, and they express a C<sub>1</sub>-C<sub>4</sub> alkyl group;

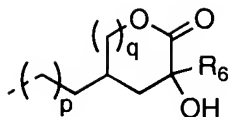
R<sub>52</sub> expresses a methyl group, an ethyl group, a trifluoromethyl group or a pentafluoroethyl group,

with the proviso that the following compounds (a), (b) and (c) are excluded,

(a) a compound in which the groups of one combination out of R<sub>21</sub> and R<sub>22</sub>, R<sub>32</sub> and R<sub>33</sub>, R<sub>34</sub> and R<sub>35</sub>, R<sub>41</sub> and R<sub>42</sub>, R<sub>43</sub> and R<sub>44</sub>, and R<sub>45</sub> and R<sub>46</sub> are both hydroxy groups, both alkyloxy groups, or a hydroxy group and an alkyloxy group,

(b) a compound expressed by the above formula (1) in which Z is the following formula (1-6),

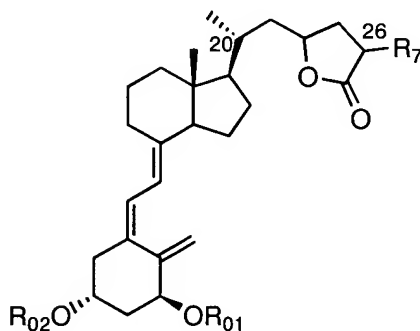
T9009



(1-6)

wherein, p and q are each 0 or the integer 1; R<sub>6</sub> is a hydrogen atom or a C<sub>1</sub>-C<sub>4</sub> alkyl group, and

(c) a compound of the following formula (2),

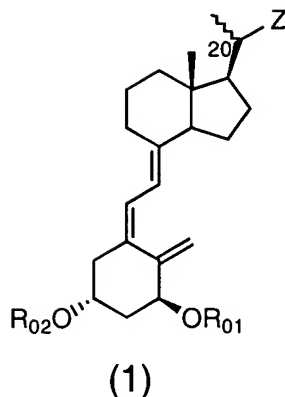


(2)

wherein, R<sub>01</sub> and R<sub>02</sub> are defined in the same manner as in the above formula (1); the configuration of the carbon atom at the 20-position is (R)-configuration; R<sub>7</sub> is a methyl group or a methylene group; when R<sub>7</sub> is a methylene group, the bond between R<sub>7</sub> and the carbon atom at the 26-position is double bond.

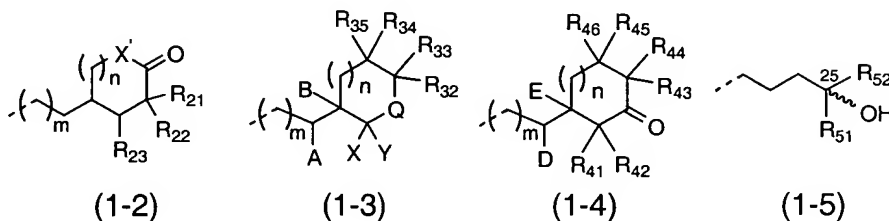
8. 53. (Amended) A method for treating hypoparathyroidism comprising administering to a subject a therapeutically effective amount of a vitamin D<sub>3</sub> compound of the following Formula (1) or pharmaceutically permissible solvate thereof,

T 9011



wherein,  $R_{01}$  and  $R_{02}$  are each independently a hydrogen atom, a trimethylsilyl group, a triethylsilyl group, a t-butyldimethylsilyl group, an acetyl group, a methoxymethyl group or a tetrahydro-4H-pyran-2-yl group;

Z is one out of the following formulae (1-2), (1-3), (1-4) or (1-5),



in the above formulae (1-2) to (1-5),

m is an integer of 0 to 2;

n is an integer of 0 to 2;

X' is an oxygen atom or NH;

$R_{21}$ ,  $R_{22}$  and  $R_{23}$  are identical to or different from each other, and they are a hydrogen atom, a hydroxy group, a carboxyl group, a trifluoromethyl group, a pentafluoroethyl group, a  $C_1$ - $C_4$  alkyloxycarbonyl group, a  $C_2$ - $C_5$  acyloxy group, a  $C_1$ - $C_4$  alkyloxy group or a  $C_1$ - $C_4$  alkyl group which may be substituted with a hydroxyl group, a  $C_2$ - $C_5$  acyloxy group or a  $C_1$ - $C_4$

alkyloxy group, or  $R_{21}$  and  $R_{22}$  together may express a  $C_3$ - $C_6$  cyclic alkyl group in cooperation with the carbon atom to which they are bonded;

Q expresses  $>C(-F)-R_{31}$  or  $>N-R_{31}$ , and herein  $R_{31}$  is a hydrogen atom, a hydroxyl group, a trifluoromethyl group, a pentafluoroethyl group, a  $C_2$ - $C_5$  acyloxy group, a  $C_1$ - $C_4$  alkyloxy group or a  $C_1$ - $C_4$  alkyl group which may be substituted with a hydroxy group, a  $C_2$ - $C_5$  acyloxy group or a  $C_1$ - $C_4$  alkyloxy group;

$R_{32}$ ,  $R_{33}$ ,  $R_{34}$  and  $R_{35}$  are identical to or different from each other, and they are a hydrogen atom, a hydroxyl group, a  $C_1$ - $C_4$  alkyl group or a  $C_2$ - $C_5$  acyloxy group;

A and B are identical to or different from each other, and they express a hydrogen atom or a hydroxyl group, or together express a single bond and form a double bond in cooperation with the single bond already shown in the formula;

X and Y together express a carbonyl group in cooperation with the carbon atom to which they are bonded, one of them is a hydrogen atom and the other is a hydroxyl group, or one of them is a hydrogen atom and the other is a  $C_2$ - $C_5$  acyloxy group;

$R_{41}$  and  $R_{42}$  are identical to or different from each other, and they express a hydrogen atom, a hydroxyl group, a trifluoromethyl group, a pentafluoroethyl group, a  $C_2$ - $C_5$  acyloxy group, a  $C_1$ - $C_4$  alkyloxy group or a  $C_1$ - $C_4$  alkyl group which may be substituted with a hydroxyl group, a  $C_2$ - $C_5$  acyloxy group or a  $C_1$ - $C_4$  alkyloxy group, or both the members together express a  $C_1$ - $C_5$  alkylidene group, or they express a  $C_3$ - $C_6$  cyclic alkyl group in cooperation with the carbon atom to which they are bonded;

$R_{43}$  and  $R_{44}$  are identical to or different from each other, and they express a hydrogen atom, a hydroxyl group, a trifluoromethyl group, a pentafluoroethyl group, a  $C_2$ - $C_5$  acyloxy

group, a C<sub>1</sub>-C<sub>4</sub> alkyloxy group or a C<sub>1</sub>-C<sub>4</sub> alkyl group which may be substituted with a hydroxyl group, a C<sub>2</sub>-C<sub>5</sub> acyloxy group or a C<sub>1</sub>-C<sub>4</sub> alkyloxy group, or both the members together express a C<sub>1</sub>-C<sub>5</sub> alkylidene group, or express a C<sub>3</sub>-C<sub>6</sub> cyclic alkyl group in cooperation with the carbon atom to which they are bonded;

R<sub>45</sub> and R<sub>46</sub> are identical to or different from each other, and they express a hydrogen atom, a hydroxyl group, a trifluoromethyl group, a pentafluoroethyl group, a C<sub>2</sub>-C<sub>5</sub> acyloxy group, a C<sub>1</sub>-C<sub>4</sub> alkyloxy group or a C<sub>1</sub>-C<sub>4</sub> alkyl group which may be substituted with a hydroxyl group, a C<sub>2</sub>-C<sub>5</sub> acyloxy group or a C<sub>1</sub>-C<sub>4</sub> alkyloxy group;

D and E express each a hydrogen atom, D is a hydroxy group and E expresses a hydrogen atom, D and E together express a single bond and express a double bond in cooperation with the single bond already shown in the formula, or E and R<sub>41</sub> together express a single bond and express a double bond in cooperation with the single bond already shown in the formula, wherein D expresses a hydrogen atom or a hydroxy group; and R<sub>42</sub> expresses a hydrogen atom, a hydroxyl group, a trifluoromethyl group, a pentafluoroethyl group, a C<sub>2</sub>-C<sub>5</sub> acyloxy group, a C<sub>1</sub>-C<sub>4</sub> alkyloxy group or a C<sub>1</sub>-C<sub>4</sub> alkyl group which may be substituted with a hydroxyl group, a C<sub>2</sub>-C<sub>5</sub> acyloxy group or a C<sub>1</sub>-C<sub>4</sub> alkyloxy group;

R<sub>51</sub> expresses -CONR<sub>511</sub>R<sub>512</sub>, -COR<sub>513</sub> or -C(OH)R<sub>514</sub>R<sub>515</sub>, wherein R<sub>511</sub> and R<sub>512</sub> are identical to or different from each other, and they are a hydrogen atom or a C<sub>1</sub>-C<sub>4</sub> alkyl group, or both the members together express a nitrogen-containing C<sub>3</sub>-C<sub>8</sub> alkyl ring or a morpholino group in cooperation with the nitrogen atom to which they are bonded; and R<sub>513</sub>, R<sub>514</sub> and R<sub>515</sub> are identical to or different from each other, and they express a C<sub>1</sub>-C<sub>4</sub> alkyl group;

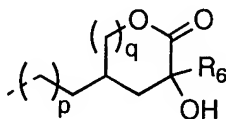
pentafluoroethyl group,

with the proviso that the following compounds (a), (b) and (c) are excluded,

(a) a compound in which the groups of one combination out of R<sub>21</sub> and R<sub>22</sub>, R<sub>32</sub> and R<sub>33</sub>, R<sub>34</sub> and R<sub>35</sub>, R<sub>41</sub> and R<sub>42</sub>, R<sub>43</sub> and R<sub>44</sub>, and R<sub>45</sub> and R<sub>46</sub> are both hydroxy groups, both alkyloxy groups, or a hydroxy group and an alkyloxy group,

(b) a compound expressed by the above formula (1) in which Z is the following formula

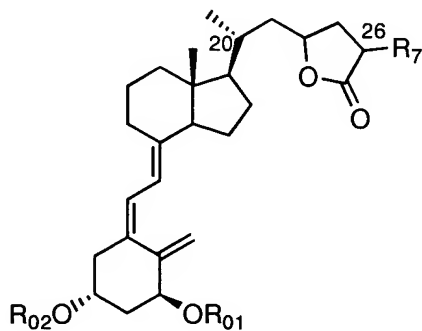
(1-6),



(1-6)

wherein, p and q are each 0 or the integer 1; R<sub>6</sub> is a hydrogen atom or a C<sub>1</sub>-C<sub>4</sub> alkyl group, and

(c) a compound of the following formula (2),

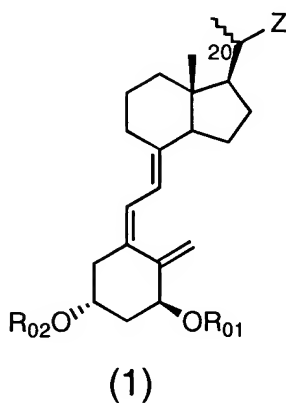


(2)

wherein, R<sub>01</sub> and R<sub>02</sub> are defined in the same manner as in the above formula (1); the configuration of the carbon atom at the 20-position is (R)-configuration; R<sub>7</sub> is a methyl group or

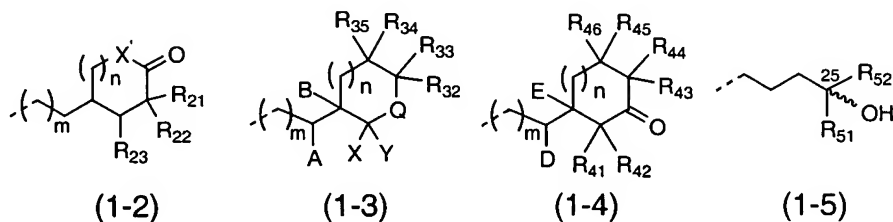
a methylene group; when R<sub>7</sub> is a methylene group, the bond between R<sub>7</sub> and the carbon atom at the 26-position is double bond.

9 54. (Amended) A method for treating metabolic disorder of cartilage comprising administering to a subject a therapeutically effective amount of a vitamin D<sub>3</sub> compound of the following Formula (1) or pharmaceutically permissible solvate thereof,



wherein, R<sub>01</sub> and R<sub>02</sub> are each independently a hydrogen atom, a trimethylsilyl group, a triethylsilyl group, a t-butyldimethylsilyl group, an acetyl group, a methoxymethyl group or a tetrahydro-4H-pyran-2-yl group;

Z is one out of the following formulae (1-2), (1-3), (1-4) or (1-5),



in the above formulae (1-2) to (1-5),

m is an integer of 0 to 2;

n is an integer of 0 to 2;

X' is an oxygen atom or NH;

*part B*  
R<sub>21</sub>, R<sub>22</sub> and R<sub>23</sub> are identical to or different from each other, and they are a hydrogen atom, a hydroxy group, a carboxyl group, a trifluoromethyl group, a pentafluoroethyl group, a C<sub>1</sub>-C<sub>4</sub> alkyloxycarbonyl group, a C<sub>2</sub>-C<sub>5</sub> acyloxy group, a C<sub>1</sub>-C<sub>4</sub> alkyloxy group or a C<sub>1</sub>-C<sub>4</sub> alkyl group which may be substituted with a hydroxyl group, a C<sub>2</sub>-C<sub>5</sub> acyloxy group or a C<sub>1</sub>-C<sub>4</sub> alkyloxy group, or R<sub>21</sub> and R<sub>22</sub> together may express a C<sub>3</sub>-C<sub>6</sub> cyclic alkyl group in cooperation with the carbon atom to which they are bonded;

Q expresses >C(-F)-R<sub>31</sub> or >N-R<sub>31</sub>, and herein R<sub>31</sub> is a hydrogen atom, a hydroxyl group, a trifluoromethyl group, a pentafluoroethyl group, a C<sub>2</sub>-C<sub>5</sub> acyloxy group, a C<sub>1</sub>-C<sub>4</sub> alkyloxy group or a C<sub>1</sub>-C<sub>4</sub> alkyl group which may be substituted with a hydroxy group, a C<sub>2</sub>-C<sub>5</sub> acyloxy group or a C<sub>1</sub>-C<sub>4</sub> alkyloxy group;

R<sub>32</sub>, R<sub>33</sub>, R<sub>34</sub> and R<sub>35</sub> are identical to or different from each other, and they are a hydrogen atom, a hydroxyl group, a C<sub>1</sub>-C<sub>4</sub> alkyl group or a C<sub>2</sub>-C<sub>5</sub> acyloxy group;

A and B are identical to or different from each other, and they express a hydrogen atom or a hydroxyl group, or together express a single bond and form a double bond in cooperation with the single bond already shown in the formula;

X and Y together express a carbonyl group in cooperation with the carbon atom to which they are bonded, one of them is a hydrogen atom and the other is a hydroxyl group, or one of them is a hydrogen atom and the other is a C<sub>2</sub>-C<sub>5</sub> acyloxy group;

R<sub>41</sub> and R<sub>42</sub> are identical to or different from each other, and they express a hydrogen atom, a hydroxyl group, a trifluoromethyl group, a pentafluoroethyl group, a C<sub>2</sub>-C<sub>5</sub> acyloxy group, a C<sub>1</sub>-C<sub>4</sub> alkyloxy group or a C<sub>1</sub>-C<sub>4</sub> alkyl group which may be substituted with a hydroxyl

group, a C<sub>2</sub>-C<sub>5</sub> acyloxy group or a C<sub>1</sub>-C<sub>4</sub> alkyloxy group, or both the members together express a C<sub>1</sub>-C<sub>5</sub> alkylidene group, or they express a C<sub>3</sub>-C<sub>6</sub> cyclic alkyl group in cooperation with the carbon atom to which they are bonded;

*Amended B1*

R<sub>43</sub> and R<sub>44</sub> are identical to or different from each other, and they express a hydrogen atom, a hydroxyl group, a trifluoromethyl group, a pentafluoroethyl group, a C<sub>2</sub>-C<sub>5</sub> acyloxy group, a C<sub>1</sub>-C<sub>4</sub> alkyloxy group or a C<sub>1</sub>-C<sub>4</sub> alkyl group which may be substituted with a hydroxyl group, a C<sub>2</sub>-C<sub>5</sub> acyloxy group or a C<sub>1</sub>-C<sub>4</sub> alkyloxy group, or both the members together express a C<sub>1</sub>-C<sub>5</sub> alkylidene group, or express a C<sub>3</sub>-C<sub>6</sub> cyclic alkyl group in cooperation with the carbon atom to which they are bonded;

R<sub>45</sub> and R<sub>46</sub> are identical to or different from each other, and they express a hydrogen atom, a hydroxyl group, a trifluoromethyl group, a pentafluoroethyl group, a C<sub>2</sub>-C<sub>5</sub> acyloxy group, a C<sub>1</sub>-C<sub>4</sub> alkyloxy group or a C<sub>1</sub>-C<sub>4</sub> alkyl group which may be substituted with a hydroxyl group, a C<sub>2</sub>-C<sub>5</sub> acyloxy group or a C<sub>1</sub>-C<sub>4</sub> alkyloxy group;

D and E express each a hydrogen atom, D is a hydroxy group and E expresses a hydrogen atom, D and E together express a single bond and express a double bond in cooperation with the single bond already shown in the formula, or E and R<sub>41</sub> together express a single bond and express a double bond in cooperation with the single bond already shown in the formula, wherein D expresses a hydrogen atom or a hydroxy group; and R<sub>42</sub> expresses a hydrogen atom, a hydroxyl group, a trifluoromethyl group, a pentafluoroethyl group, a C<sub>2</sub>-C<sub>5</sub> acyloxy group, a C<sub>1</sub>-C<sub>4</sub> alkyloxy group or a C<sub>1</sub>-C<sub>4</sub> alkyl group which may be substituted with a hydroxyl group, a C<sub>2</sub>-C<sub>5</sub> acyloxy group or a C<sub>1</sub>-C<sub>4</sub> alkyloxy group;

*Handwritten: B1*  
R<sub>51</sub> expresses -CONR<sub>511</sub>R<sub>512</sub>, -COR<sub>513</sub> or -C(OH)R<sub>514</sub>R<sub>515</sub>, wherein R<sub>511</sub> and R<sub>512</sub> are identical to or different from each other, and they are a hydrogen atom or a C<sub>1</sub>-C<sub>4</sub> alkyl group, or both the members together express a nitrogen-containing C<sub>3</sub>-C<sub>8</sub> alkyl ring or a morpholino group in cooperation with the nitrogen atom to which they are bonded; and R<sub>513</sub>, R<sub>514</sub> and R<sub>515</sub> are identical to or different from each other, and they express a C<sub>1</sub>-C<sub>4</sub> alkyl group;

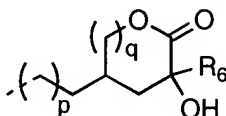
R<sub>52</sub> expresses a methyl group, an ethyl group, a trifluoromethyl group or a pentafluoroethyl group,

with the proviso that the following compounds (a), (b) and (c) are excluded,

(a) a compound in which the groups of one combination out of R<sub>21</sub> and R<sub>22</sub>, R<sub>32</sub> and R<sub>33</sub>, R<sub>34</sub> and R<sub>35</sub>, R<sub>41</sub> and R<sub>42</sub>, R<sub>43</sub> and R<sub>44</sub>, and R<sub>45</sub> and R<sub>46</sub> are both hydroxy groups, both alkyloxy groups, or a hydroxy group and an alkyloxy group,

(b) a compound expressed by the above formula (1) in which Z is the following formula

(1-6),



(1-6)

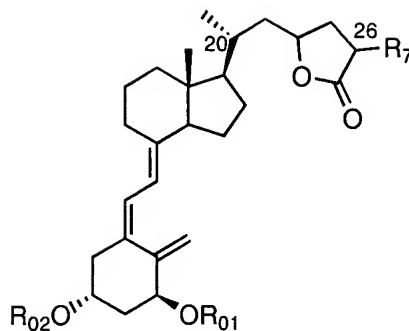
wherein, p and q are each 0 or the integer 1; R<sub>6</sub> is a hydrogen atom or a C<sub>1</sub>-C<sub>4</sub> alkyl group, and

(c) a compound of the following formula (2),

Amendment Under 37 C.F.R. § 1.111  
U.S. Application No. 10/035,217

*Patent*  
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T9019



(2)

wherein, R<sub>01</sub> and R<sub>02</sub> are defined in the same manner as in the above formula (1); the configuration of the carbon atom at the 20-position is (R)-configuration; R<sub>7</sub> is a methyl group or a methylene group; when R<sub>7</sub> is a methylene group, the bond between R<sub>7</sub> and the carbon atom at the 26-position is double bond.

*B*